

Table 1. Draft LWG Mitigation Framework¹

	Upper Shore Zone ³				Main Channel Nearshore Zone ⁴				Main Channel Shallow Water Zone ⁵				Main Channel Deep Water Zone ⁶				Off-channel Nearshore Zone ⁴				Off-channel Shallow Water Zone ⁵				Off-channel Deep Water Zone ⁶				Natural Beach Area ⁷				Vegetated Buffer/Riparian Area			
Remedial Technologies	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²	Functioning - High	Functioning - Low	Degraded - Low ¹	Degraded - High ²				
Dredging																																				
Dredging resulting in a habitat type conversion to deep water																																				
Dredging that resulting in a habitat type conversion (may include capping back over the dredge area)																																				
Capping																																				
Capping resulting in a significant change in substrate type (i.e., from silt/sand/gravel to large rock) but no change in depth zones																																				
Capping that does not result in a significant change in the substrate type (i.e., substrate size remains similar to existing conditions) and no change in depth zones																																				
Capping that leads to a conversion of deep water to shallower water depth zones and results in a significant change in substrate type (i.e., from silt/sand/ gravel to large rock)																																				
Capping that leads to a conversion of deep water to shallow water depths and does not result in a significant change in substrate type (i.e., from silt/sand/gravel to large rock)																																				
Shoreline Integration⁸																																				
Shoreline integration resulting in hardening of the shoreline																																				
Shoreline integration resulting in softening of the shoreline																																				
Shoreline integration that does not result in a change in the shoreline condition																																				
Enhanced Monitored Natural Recovery (includes in situ treatment)																																				
Placement of substrate suitable for a specific location (i.e., similar to existing substrate)																																				
Over-water and In-water Structures																																				
Removal of over-water structures that causes aquatic shading																																				
Installation of over-water structures that causes aquatic shading																																				
Installation of over-water structures in a way that minimizes the amount of aquatic shading and impacts to habitat function																																				
Replacement of over-water structures in a way that reduces the amount of aquatic shading and that is expected to improve habitat function																																				
Replacement of over-water structures that significantly expands the area of aquatic shading																																				
Removal of existing piles that provide habitat to predators of juvenile salmonids																																				
Installation of piles that provide habitat to predators of juvenile salmonids																																				
Confined Disposal Facility Construction/Confined Aquatic Disposal																																				
Filling that leads to a conversion of deep water to shallower water depth zones and results in a significant change in substrate type (i.e., from silt/sand/ gravel to large rock)																																				
Filling that leads to a conversion of deep water to shallow water depths and does not result in a significant change in substrate type (i.e., from silt/sand/gravel to large rock)																																				
Filling aquatic habitat that results in a conversion to upland habitat																																				

Notes:
1 Degraded Low = Habitat characterized by one or two of the following attributes: steep slope (>3:1), presence of riprap, presence of over-water structure that causes aquatic shading, lack of riparian vegetation; existing use that affects the utility of habitat by species (e.g., an area affected by prop wash from ships or tugs)
2 Degraded High = Habitat characterized by three or more of the following attributes: steep slope (>3:1), presence of over-water structure that causes aquatic shading, lack of riparian vegetation; existing use that affects the utility of habitat by species (e.g., an area affected by prop wash from ships or tugs)
3 Upper Shore Zone = The regulatory-defined ordinary high water (OHW) elevation to the lower edge of persistent woody vegetation. This zone is periodically available to fish and aquatic species during high water events.
4 Nearshore Zone = The zone between the lowest level of persistent woody vegetation to -10 feet. The upper elevations of this zone are seasonally available to fish and aquatic species, while the lower elevations are continually available. This zone is the most limiting in the Willamette River and is important to the growth and survival of juvenile salmonid species and lamprey ammocoetes.
5 Shallow Water Zone = The zone that extends from -10 to -20 feet from the lowest level of persistent woody vegetation. This zone is also limiting in the Lower Willamette River and is important for juvenile salmonid fish as they grow and transition to deeper water depths as well as for adult sturgeon holding areas and potentially for adult lamprey.
6 Deep Water Zone = The aquatic area deeper than -20 feet from the lowest level of persistent woody vegetation. This zone is also continually available to fish and aquatic species, but is not limiting in the Lower Willamette River.
7 Shoreline Integration = To successfully integrate a new cap or dredge slope into the shoreline, the shoreline may need to be altered; the need for dredging and capping in the river may result in the need for integration into the higher shoreline for removal or capping of contaminants in the lower shoreline.
8 This matrix is focused on long-term habitat impacts rather than short-term construction related impacts. The short-term construction related impacts would be dealt with using BMPs that could potentially be employed, and would not require habitat mitigation.
9 Natural Beach Area = Areas of naturally formed beaches that are at or near the water line (i.e., visible as beaches) at water levels occurring during the times of peak juvenile salmonid presence.